DESCRIPTION OF A NEW SUBSPECIES OF BOOBOOK OWL *NINOX NOVAESEELANDIAE* (GMELIN) FROM ROTI ISLAND, INDONESIA

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ABSTRACT

Four subspecies of the Boobook Owl *Ninox novaeseelandiae* are recognised for the Timor region namely: *Ninox novaeseelandiae fusca* from Timor Island; *Ninox n. plesseni* from Alor Island; *Ninox n. cinnamomina* from Babar Island; and *Ninox n. moae* from Moa, Leti and Romang Islands. The new subspecies from Roti Island differs in its smaller size, colouration and wing structure. A re-description of *Ninox novaeseelandiae fusca* and *N. n. plesseni* is also included.

INTRODUCTION

In October 1990 the Western Australian Museum in collaboration with the Museum Zoologicum Bogoriense, carried out a vertebrate survey of Roti Island in the Lesser Sundas, Indonesia. During this survey a small *Ninox* owl was mist-netted in a patch of open woodland behind a dense stand of mangroves near the northern end of the island. The bird was prepared into a study skin and tissue samples placed in liquid nitrogen.

Five resident species of *Ninox* owls occur in Wallacea namely; Boobook Owl *N. novaeseelandiae*, Moluccan Hawk-Owl *N. squamipila*, Speckled Hawk-Owl *N. punctulata*, Ochre-bellied Hawk-Owl *N. ochracea* and Sumba Boobook *N. rudolfi*. The Roti Island specimen is most like members of the Boobook Owl complex, but is very different from the forms hitherto described. In this paper we describe this new subspecies of *Ninox novaeseelandiae* from Roti Island and provide detailed descriptions and comparisons with *N. n. fusca* from Timor I. and *N. n. plesseni* from Alor I.

BOOBOOK OWL COMPLEX

The Boobook Owl *Ninox novaeseelandiae* is widely distributed, ranging from eastern Indonesia including the Lesser Sunda Islands and Moluccas (Kai

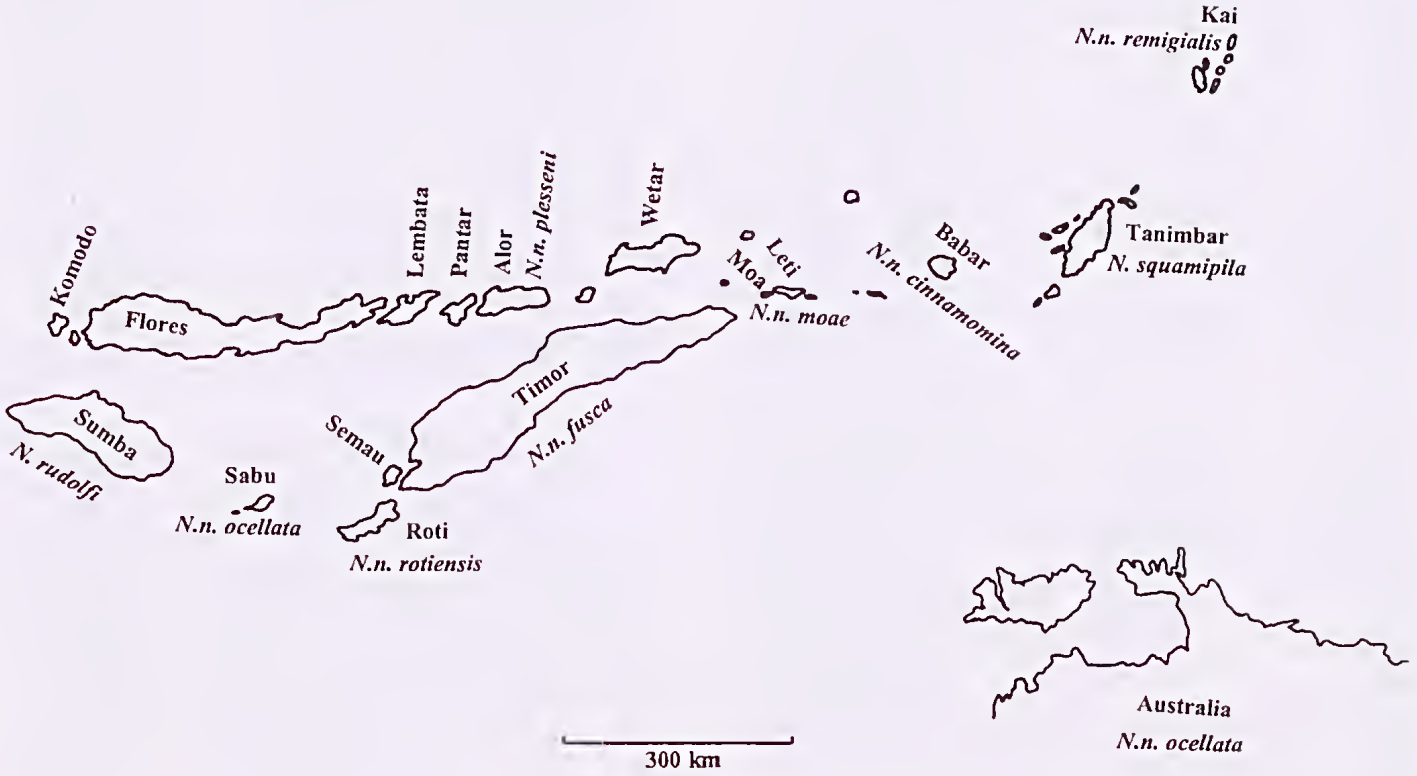

Figure 1. Map of Lesser Sunda region showing distribution of *Ninox* species and subspecies.

Islands) to southern New Guinea, Australia (including Tasmania), Lord Howe Island, Norfolk Island and New Zealand. It undergoes considerable geographic variation throughout its range and fifteen subspecies were recognised by Peters (1964). Even within the Wallacean region geographic variation in this species is to say the least very complex, embracing a number of very diverse forms.

White and Bruce (1986) list six subspecies for Wallacea namely: *Ninox novaeseelandiae fusca* (Vieillot 1817) from Timor; *Ninox n. plesseni* Stresemann 1929 from Alor; *Ninox n. cinnamomina* Hartert 1906 from Babar; *Ninox n. moae* Mayr 1943 from Moa, Leti and Romang Islands; *Ninox n. ocellata* (Bonaparte 1850) from Sabu; and *Ninox n. remigialis* Stresemann 1930 from Kai Islands (Figure 1). They divided the Wallacean forms into 3 groups: 1) *fusca* and *plesseni*, 2) *cinnamomina* and 3) *moae, ocellata* and *remigialis*. They expressed some doubt on the validity of some of these races (especially those comprising group 3), noting that birds from Sabu Island are not distinguishable from northern Australian birds (see also Mees 1964) and that other members of this group varied only slightly. Furthermore the taxonomic status of the Sumba Boobook *Ninox rudolfi* is unresolved. Mees (1964) took the view that it was specifically distinct; Eck (1970) retained it as a race of *novaeseelandiae*; and White and Bruce (1986) noted that it was probably an allospecies of *novaeseelandiae*. As is the case with most night birds we are hampered by a paucity of material and lack of ecological data. The two races, *plesseni* and *remigialis* are still for example only known from the holotypes.

MATERIALS AND METHODS

In addition to the single specimen of the new subspecies described in this paper, specimens of the following taxa were examined: *Ninox novaeseelandiae fusca*; *N. n. cinnamomina*; *N. n. moae*; *N. n. plesseni*; *N. n. ocellata*; *N. squamipila hypogramma*; *N. s. squamipila*; *N. s. natalis*; *N. punctulata*; *N. connivens connivens* and *N. scutulata japonica*. All Wallacean *Ninox* including the new subspecies are illustrated (Figure 2) to show variation in size and colouration. We also redescribe *Ninox novaeseelandiae fusca* from Timor and *N. n. plesseni* from Alor and include illustrations of their wing and tail pattern and shape.

Measurements were taken as follows: length of chord of flattened wing; length of tail (along a central rectrix); length of tarsus; length of middle toe and claw; length of bill from edge of cere and length of entire bill (from tip to base of skull).

TIMOR SUBSPECIES

Ninox novaeseelandiae fusca
(Vieillot 1817)

DESCRIPTION

Length 300 mm. Weight 180 g (one male from Semau I).

Forehead and sides of crown dusky white, joining with


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Figure 2. *Ninox* owls of Wallacea.
1 *Ninox novaeseelandiae fusca*, 2 *N. n. ocellata*, 3 *N. n. cinnamomina*, 4 *N. n. plesseni*, 5 *N. n. rotiensis*, 6 *N. scutulata japonica*, 7 *N. rudolfi*, 8 *Ninox connivens rufostrigata*, 9 *N. ochracea*, 10 *N. punctulata*, 11 *N. squamipila squamipila* and 12 *N. squamipila hypogramma*.

the whitish coloured basal feathering to the nasal bristles. Crown, dull sepia brown, greyish brown or fuscous brown, some birds (e.g. AMNH 630571 ♀ from Atapupu and 345548 ♂ from Tjamplong) have some feathers edged whitish giving a streaky appearance. Nape and hindneck sepia brown or darker fuscous brown, most birds with indistinct whitish or buff subterminal twin spots to the feathers (absent on some birds). Upper back generally plain sepia or fuscous brown, sometimes with scattered buff or whitish spots on upper mantle. Lower back, rump and uppertail coverts sepia or fuscous brown, only one specimen (Leiden Mus Cat S) with subterminal whitish bars and markings to feathers. Scapulars, variable, mostly sepia brown, the upper series unmarked or with odd spots, and lower series with large white spots or blotches. Marginal and lesser upperwing coverts sepia brown, usually unmarked but sometimes with odd whitish spots. Median and greater coverts, variable, usually sepia brown, the greater series with two half spots or notches on visible portion of

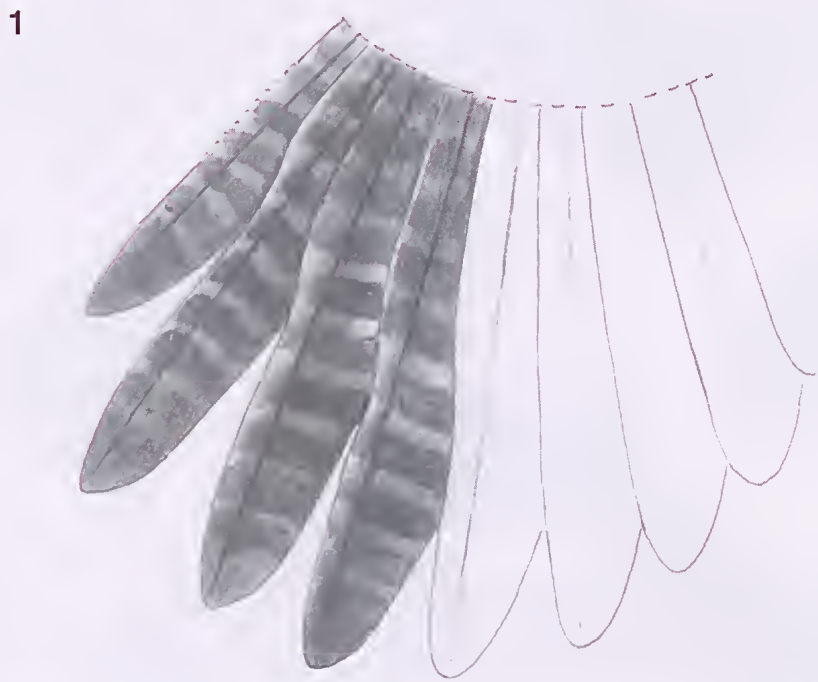

Figure 3. Wing pattern and shape of; 1, *Ninox novaeseelandiae fusca;* 2, *N. n. plesseni* and 3, *N. n. rotiensis.*

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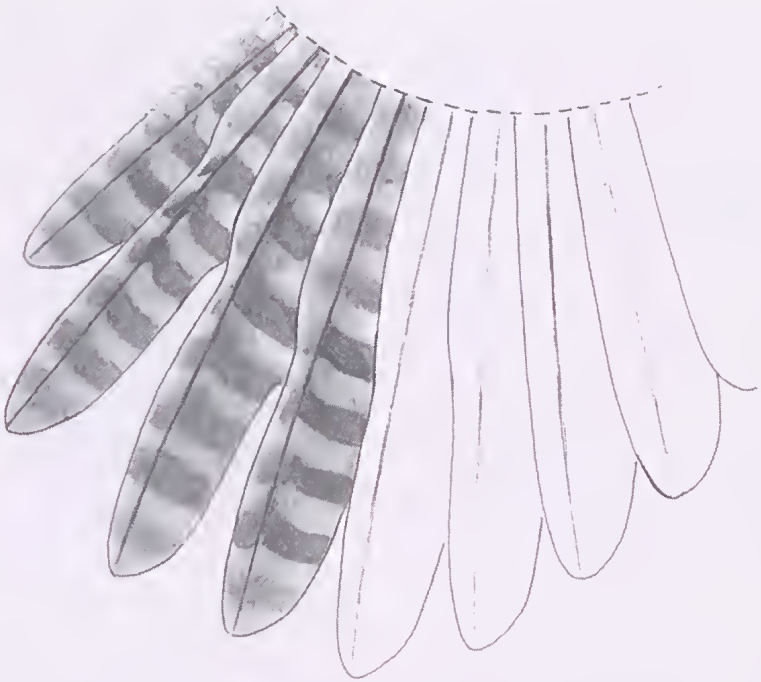

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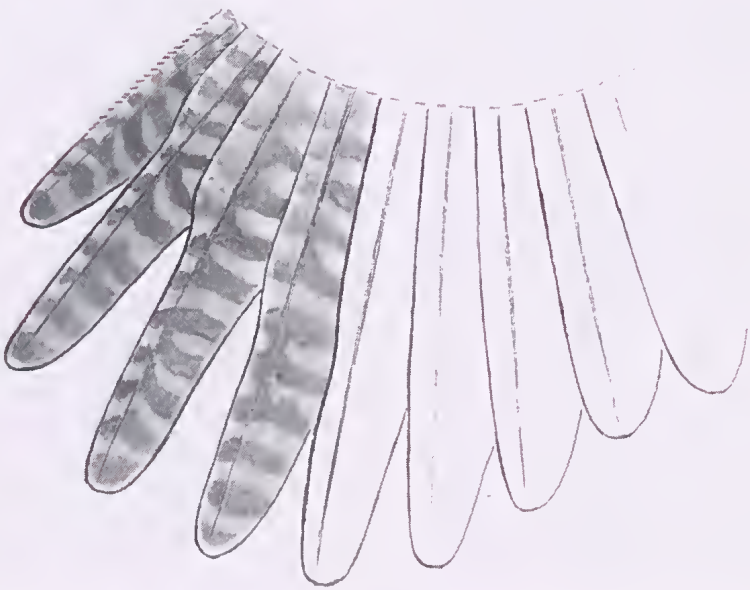

outer webs, the median series similar but sometimes lacking the white spots or having only one spot on plain brown feather. Primaries dark sepia brown narrowly barred with pale brown or greyish brown (barring indistinct on inner webs of dark birds); the pale bars grading to buffy white or white forming distinct pale notches on outer webs (distinct even on darkest birds); second outermost primary shows 6 bars and dark tip beyond the longest greatest covert. Secondaries similar to primaries except for whitish bars on inner webs. Tertiaries, variable, mostly sepia brown notched or with partial white or buffy bars on both webs, the lower series with more defined barring. Tail barred with dark sepia brown and dull brownish white or greyish brown on inner feathers and brownish white to white on outer feathers (6 bars visible beyond the upper tail coverts, Figure 4). Nasal bristles dull white with black shafts, the longest extending to tip of bill. Chin with small tuft of black or dark brown bristly feathers at extent of feathering between rami; sides of chin whitish. Throat, breast, belly and flanks dull white streaked with sepia brown and cinnamon brown, (the feathers white with broad brown shaft streak giving a boldly patterned appearance). Underwing coverts variable, mostly mottled and barred with cinnamon brown and white. Flight feathers mostly barred with sepia brown and greyish white. Undertail like upper surface but paler, i.e. indistinctly barred with sepia brown and greyish white. Legs cinnamon buff or buff, generally paler on lower tarsus (unmarked). Iris yellow; orbital ring blackish; mouth flesh pink; feet whitish or pale brown (Figure 2).

DISTRIBUTION. Occurs on Timor and Semau Island (Figure 1).

STATUS. Uncommon to moderately common on Timor Island, uncommon on Semau Island.

ALOR SUBSPECIES

Ninox novaeseelandiae plesseni
Stresemann 1929

DESCRIPTION

Forehead and sides of crown dusky white, joining with the whitish coloured basal feathering to the nasal bristles. Crown, dull russet brown, most feathers with dull whitish or buff spot (giving a weakly spotted appearance). Nape and hindneck russet brown most feathers with whitish subterminal spots or bar (giving a mottled appearance). Back and scapulars russet brown the feathers with white spots and bars (giving a strongly mottled appearance). Marginal and lesser upperwing coverts russet brown, spotted with cinnamon brown and white. Greater coverts mostly russet brown barred with cinnamon brown and spotted with white. Primaries sepia brown, barred with pale brown, the pale bars grading to cinnamon buff or whitish on outer web. Secondaries similar to primaries except pale bars grading to white on inner web. Tertiaries mostly sepia brown with partial white and buffy bars. Tail barred with dark sepia brown and dull

brownish white, outer feathers paler (6 bars visible beyond the upper tail coverts, barring stronger than in *fusca*, Figure 4). Nasal bristles dull white with black shafts, the longest extending to tip of bill. Chin whitish with small tuft of blackish bristly feathers at base of bill. Throat and upper breast dull white streaked with russet brown. Lower breast, belly, flanks and thighs white with irregular russet brown cross bars. Underwing coverts mottled with brown and white; flight feathers barred with sepia brown and greyish white. Undertail like upper surface but paler. Legs white tinged with buff.

Overall appearance similar to *fusca* except upperparts more spotted or mottled and underparts with more cross-barring (See figure 2).

DISTRIBUTION. Only known from type specimen, a female collected in 1927 at Tanglapoi, West Alor at 1000 m (Zool. Mus. Berlin. 28.547) (Figure 1).

Ninox novaeseelandiae rotiensis subsp. nov.

HOLOTYPE

Adult female (WAM A23609), collected by R.E. Johnstone on 17 October 1990 at Tsabela, 10°35'S, 123°15'E, Roti Island, Indonesia.

Table 1. Measurements (mm) of *Ninox novaeseelandiae rotiensis*, *N. n. plesseni*, *N. n. fusca*, *N. n. ocellata* and *N. n. cinnamomina*.

Locality and Subspecies	Sex	Wing	Tail	Tarsus	Middle Toe and Claw	Bill entire	Bill exposed	Bill width
Roti I. *rotiensis*	♀	188	100	30.0	29	25.0	15	9.7
Alor I. *plesseni*	♀	212	118	37.0	36	28.0	16	8.9
Timor I. *fusca*	4♂	216–224	114–120	33.0–34.0	33–37	25.0–28.0	16.0–17.5	9.5–10.3
	3♀	219–225	119–122	31.0–36.0	35–39	26.0–32.0	16.0–18.0	9.4–10.7
	2○	214, 218	108, 116	34.5,36.0	–	25.5,26.5	14.5, 16.5	–
Babber I. *cinnamomina*	1♂	212	123	38.0	39	27.0	17.0	11.6
	1♀	212	115	34.0	37	–	–	11.0
	1○	214	119	34.0	38	28.5	16.5	10.1
Sabu I. *ocellata*	1♂	212	114	38.0	41	26.5	16.0	11.6
	1♀	224	119	37.0	37	28.5	17.5	11.6
N-W Australia *ocellata*	8♂	216–240	119–133	37–43	–	26–28	14–16	9.6–12.3
	13♀	223–242	116–141	40–46	–	27–29	16–18	10.1–13.4

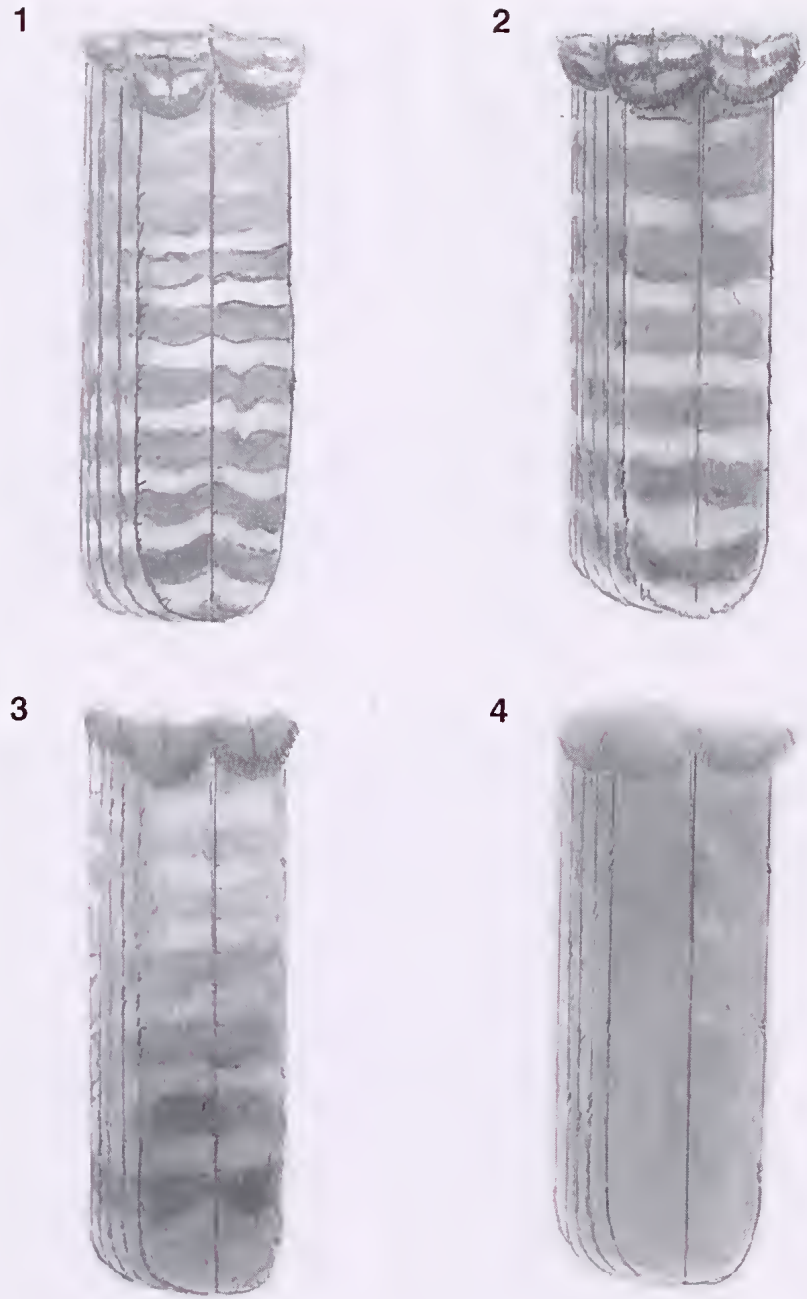

Figure 4. Dorsal tail pattern of 1, *Ninox novaeseelandiae rotiensis*; 2, *N. n. plesseni*; 3, *N. n. fusca* and 4, *N. n. ocellata*.

DIAGNOSIS

Differs from *Ninox novaeseelandiae fusca* and *N. n. plesseni* in its smaller size (Table 1); different colouration, being more heavily barred on the primaries, rump and uppertail coverts and tail (Figure 2) and in having a different wing structure (Figure 3).

DESCRIPTION

Length 270 mm. Weight 146 g.

Forehead and sides of crown dusky white, joining with the whitish coloured basal feathering to nasal bristles. Central crown sepia brown, the feathers broadly edged with white, or with enlarged white subterminal spots giving a streaked appearance. Nape mostly sepia brown, tinged with rufous buff. Hindneck sepia brown, most feathers with broad whitish twin spots that sometimes coalesce to form a subterminal bar. Spotting more conspicuous on ear coverts and sides of neck. Upper back mainly sepia brown with scattered (mostly hidden) white spots. Lower back, rump and uppertail coverts sepia brown, tinged with rufous, and feathers conspicuously barred with white and buff (not approached by any specimen of *fusca*). Scapulars sepia brown extensively spotted (on upper series) and barred (on the lower series) with white. The white spots not as large or as bold as in *fusca*. Marginal and lesser upperwing coverts russet brown, most feathers with a white spot on outer web. Median and greater coverts slightly paler with two whitish spots or half spots on outer web. Primaries rather evenly barred with dark sepia brown and pale brown, the pale bars grading to cinnamon brown and brownish white on outer webs. Second outermost primary shows nine bars and dark tip spot beyond the longest greater primary coverts. Secondaries similar but pale bars on outer webs notched with brownish white or white. Tertiaries conspicuously barred with cinnamon brown and buffy brown or dull white (the barring narrower than both *fusca* and *plesseni*). Tail conspicuously barred with sepia brown and dull brownish white on inner feathers and off white on outer feathers, again the barring narrower (9 bars visible beyond the upper tail coverts, 6 in *fusca* and *plesseni*, Figure 4). Nasal bristles dull white with black shafts, the longest extending to tip of bill. Chin with a small tuft of dark russet brown bristly feathers at extent of feathering between rami; sides of chin whitish. Throat and breast mainly dull white streaked with sepia brown and cinnamon brown. Belly and flanks mostly white mottled with cinnamon brown (most feathers with dark basal marking and shaft streak and subterminal bar or crescent). Underwing coverts mottled and barred with cinnamon brown and white; flight feathers barred with sepia brown and greyish white. Undertail indistinctly barred with greyish brown and greyish white. Legs buff mottled with rufous brown. Iris yellow; orbital ring grey; mouth flesh pink; feet grey (see Figure 2).

DISTRIBUTION. Known only from type locality, Roti Island,

Nusa Tenggara, Indonesia (Figure 1).

STATUS. Unknown. One or two small owls (probably this species) were observed in the locality hunting over mangroves and dense woodland.

DISCUSSION

The most debatable part of the foregoing classification is the treatment of *'rotiensis'*. In view of the difficulties in the species – level systematics within this group of owls, and given the lack of specimens and data on vocalisations etc., it is most difficult to decide whether *rotiensis* is worthy of elevation to a full species or whether it should be maintained as a subspecies of *novaeseelandiae*. Furthermore, it is also by no means certain that *fusca*, *plesseni* and perhaps *cinnamomina* are only subspecifically distinct from *novaeseelandiae*. Even the taxonomic status of the Sumba Boobook, *Ninox rudolfi*, at full species level is not universally accepted, with some workers maintaining that it too is merely a subspecies of *N. novaeseelandiae*.

Based on morphology *rotiensis* is clearly separable from other members of the *novaeseelandiae* complex and certainly warrants at least subspecific status. In some characters however, including spotting on the upperparts and rounded wing structure *rotiensis* approaches *plesseni* from Alor and *Ninox rudolfi* from Sumba.

Preliminary molecular studies (by L. Christidis and J. Norman, pers comm. Museum of Victoria) place *N. novaeseelandiae fusca* in a clade along with other Australian and New Zealand forms of *N. novaeseelandiae*, but as the most diverged lineage. The form *'rotiensis'* is not directly part of this clade and is in fact outside a clade comprising the *N. novaeseelandiae* complex, *N. theomacha* and *N. solomonis*.

Also of interest is the geographic position of *rotiensis*, sandwiched in between two other well marked subspecies, namely *'fusca'* on Timor and *'ocellata'* on Sabu (Savu) Island. Whereas Semau Island, lying some 5km off the south-west tip of Timor, has been (as one would expect) colonised by *fusca*, Roti Island which lies only slightly further (10km) off the south-west tip of Timor, is inhabited by a very different form *rotiensis*. Mees (1964) noted that the inclusion of Sabu birds with northern Australian *ocellata* may reflect historical fact, i.e. that Sabu had been independently colonised from Australia rather than from Timor in more recent times. Sabu birds are very similar in colouration to north Western Australian *ocellata* but are slightly smaller (see Table 1).

It appears that the isolating mechanisms in the Lesser Sunda Islands have given rise to a number of very distinct forms. Only one species – subspecies occurs on any island, and this condition still applies on Roti despite the representative there being a markedly smaller bird. Further work is necessary in both the Lesser Sunda and Moluccu region to clarify the distributions, taxonomic status

and relationships of a number of species and subspecies within the genus *Ninox* and especially within the Boobook Owl complex.

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